July 16, 1999

MEMORANDUM

SUBJECT: Review of Draft Proposed Plan for the Pagel's Pit Superfund Site, Illinois

FROM: Ken Lovelace
Region 5/7 Accelerated Response Center, OERR

TO: Bernard Schorle, RPM
Superfund Division, Region V

The comments listed below are based on my review of the draft Proposed Plan for the Pagel's Pit Superfund Site, dated July 9, 1999. The comments, listed below, are separated into general and specific comments.

General Comments

These are the most important comments to be addressed, listed in order of importance .

1. Proposed Remedy Changes, OU1. There does not appear to be any basis for selecting monitored natural attenuation (MNA) as the remedy for OU1. The fact that pump and treat may be "too expensive" is not a reason to select MNA. Is there any data showing that contaminant levels in ground water have been decreasing over time, that the plume is stable or shrinking, etc.? Are the COCs at relatively low levels compared to the required cleanup levels? (What are the required cleanup levels, MCLs, AGQSs? See comment No. 6, below.) What natural attenuation processes are likely to reduce concentrations in ground water? **If there is no good answer to any of these questions it may be premature to select MNA as the remedy.**

2. The Proposed Plan should follow the recommended outline provided in the draft ROD Guidance. This document is available from the EPA Intranet at <http://intranet.epa.gov/oerrinet/review/index.htm> A copy of the recommended Outline and Checklist for Proposed Plans is attached.

3. Introduction. Clarify in the first paragraph that this Proposed Plan identifies the preferred alternative for ground water in OU2 (southeast corner of site) and modifies the remedy previously selected for ground water in OU1 (waste disposal area). The remedy for OU1 was selected in a Record of Decision issued in 1991.

4. The Summary of Alternative section is missing. Only the Preferred Alternative is discussed for OU2 ground water and only the Proposed Remedy Change is discussed for OU1. Alternatives should be

discussed in the Proposed Plan, including the "no action" alternative and other alternatives. Some of the alternatives evaluated in the 1991 FS should still apply to OU1 and/or OU2. Also, were other alternatives considered since the FS (e.g., air sparging, MNA)? Only the most appropriate alternatives from the FS need to be discussed. Only a very brief summary of each alternative is needed, which should include the major components and estimated costs (capital, O&M and present worth).

5. The Evaluation of Alternatives section is missing. This section should explain the nine evaluation criteria and the alternatives should be compared using the nine criteria. This section can be brief, but needs to summarize the advantages and disadvantages of each alternative (in terms of the nine criteria) so that the reader will know the rationale used to select the preferred alternative.

6. Remedial Action Objectives. In the first objective on page 7, what is the "zone of attenuation?" I think you mean that the entire plume outside the waste management area will be restored to "drinking water standards." Also, clarify that these are State and Federal drinking water standards. Do AGQSs need to be mentioned, since they are the more stringent State standard?

7. Summary of Site Characteristics. The second paragraph on page 5 is not clear. The first part of the paragraph discusses VOC levels in the GMZ, while the second part discusses the VOCs levels in "background" wells. Is the GMZ the same as OU1 (waste disposal area) and is the "background" area OU2 (southeast corner of site)? This should be clarified. Also, both MCLs and AGQSs are discussed which adds to the confusion. What point is being made in this paragraph? Are you saying that concentration levels of most VOCs are higher upgradient of the waste disposal area, in the southeast corner of site, than in the waste disposal area itself (OU1)? This means that most VOCs found in the southeast corner of site probably came from the Acme Solvent Site (with the possible exception of ___).

It appears that the contaminants of concern (COCs) for the waste disposal area (OU1) are different than those for the southeast corner of site (OU2). If so, this point should be made. It would be really helpful to list the COCs in a table and eliminate some of the discussion on page 5. Also, it appears that the concentration levels are relatively low for most COCs. This point should also be emphasized.

8. The discussion of site risks (page 6) should be included in a separate section entitled "Summary of Site Risks." (See comment No. 2, above.)

Specific Comments

These are relatively minor comments or questions offered to improve the clarity of this document.

9. Page 2, Site Background. Only part of the site is fenced. Are the "steep slopes and heavily wooded areas" sufficient to restrict access to the landfill?

10. Page 3, Site Background. It would be helpful to know whether the "asphaltic concrete" liner placed over the entire landfill or portions of the landfill? Also, approximately when was the pump-and-treat system implemented for the Acme Solvent Site.

11. Page 4, Summary of Site Characteristics. Some of the monitoring wells discussed in this section do not appear on Figure 1 (e.g., well G115).

12. Page 5, Summary of Site Characteristics. Are "Applicable groundwater quality standards (AGQSs)" some type of State standard? If so say so.

13. Page 4, Summary of Site Characteristics. Has the contaminant plume been defined for OU1 and OU2? Does the GMZ coincide with the plume? The plumes for OU1 and OU2 should be indicted on Figure 1.

14. Page 11, Community Participation. Add relevant information to this section.

I hope you find these comments to be helpful. Let me know if you have any questions, by calling (703) 603-8787 or by e-mail.

cc: Larry Zaragoza, OERR
Bonnie Gitlin, OERR

PROPOSED PLAN
OPERABLE UNIT 2 and GROUNDWATER REMEDY MODIFICATION
PAGEL'S PIT SITE
WINNEBAGO COUNTY, ILLINOIS
Draft, July 9, 1999

INTRODUCTION

This Proposed Plan identifies the preferred alternative for the remediation of the groundwater at the Pagel's Pit Superfund site and provides the explanation for the preference. This Plan includes a summary of the June 1991 Record of Decision (ROD) for Operable Unit (OU) 1, which consisted of the wastes that have been disposed of at the Site and the contaminated groundwater around the waste disposal area, especially that at the downgradient side of the Site, but not the groundwater in the southeast corner of the Site. This Proposed Plan addresses the groundwater in the southeast corner, which is OU 2, as well as the rest of the groundwater for which a change in the remedial action is proposed. This document is issued by the U.S. Environmental Protection Agency (USEPA), the lead agency for Site activities. USEPA, in consultation with the Illinois Environmental Protection Agency (Illinois EPA) will select a final remedy for the Site after reviewing and considering all information submitted during the 30-day public comment period.

USEPA is issuing this Proposed Plan as part of its public participation responsibilities under section 117(a) of the Comprehensive Environmental, Response, Compensation, and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA). This Proposed Plan summarizes information that can be found in greater detail in the remedial investigation (RI) and feasibility studies (FS) reports that were issued in 1991 and other documents contained in the Administrative Record file for this Site. USEPA encourages the public to review these documents to gain a more comprehensive understanding of the Site and Superfund activities that have been conducted at the Site. The Administrative Record file, which contains the information on which the selection of the response action will be based, is available at the USEPA Region 5 in Chicago and at:

Rockford Public Library
215 North Wyman Street
Rockford, Illinois 61101

SITE BACKGROUND

The Pagel's Pit site (Winnebago Reclamation Landfill or WRL) occupies about 100 acres on the west side of Lindenwood Road (see Figure 1), south of Baxter Road and about 5 miles south of Rockford, Illinois. The landfill has been in operation since about

1972 and has approximately 1 to 2 years of operation left before it reaches capacity. Municipal refuse and sewage treatment plant sludge have been the primary wastes accepted at the Site. Illinois special wastes (industrial process wastes, pollution control wastes, or hazardous wastes, except as determined pursuant to the Illinois Environmental Protection Act) have also been disposed of at the facility.

The Site is located in a predominately rural unincorporated area. It is bounded on the west by Killbuck (or Kilbuck) Creek and on the east by Lindenwood Road. Killbuck Creek, a perennial stream, merges with the Kishwaukee River about 2.5 miles northwest of the Site. The Kishwaukee River merges with the Rock River about 1.5 miles northwest of the confluence of Killbuck Creek and the Kishwaukee River. The Site is located on a topographic high between Killbuck Creek to the west and unnamed intermittent streams to the north and the south. Land use around the Site is a mix of agricultural, rural residential, commercial, and industrial. A new waste disposal unit is being developed to the south of the Site.

The topography surrounding the landfill area is relatively flat to gently rolling. The ground surface elevation is approximately 706 feet mean sea level (MSL) at Killbuck Creek. The landfill lies outside of the 100-year floodplain of Killbuck Creek and is not within any designated wetland area. Although an inventory of terrestrial plant and animal species has not been performed, the Site is not known to be inhabited by endangered or threatened species.

Access to that part of the Site closest to Lindenwood Road is restricted by a chain link fence. Access to the rest of the Site is restricted by other fencing and the topography, which includes steep slopes and heavily wooded areas.

The surficial unconsolidated deposits in the area of the Site are predominantly glacial drift ranging from a thin mantle over the dolomite in the bedrock uplands to the east of the Site to greater than 70 feet in the bedrock valley west of the Site. The unconsolidated deposits are predominantly sand and gravel underneath and north of the Site with a silty clay to the south of the Site. The underlying bedrock surface is highly variable. The dolomite bedrock is generally fractured but the intensity is variable. Chert layers or nodules were commonly noted on boring logs as were vugs (void spaces), but cavernous zones were not reported.

This operating landfill is located at a former sand and gravel quarry. It has been sequentially constructed and filled in several sections. Development initially occurred in an east to west direction, first in the southern half and then in the northern half. The western one-third has now been completed and the final

cover has been installed. The landfill wastes cover approximately 47 acres. The landfill liner was constructed by grading and compacting the base and side walls of the landfill. Asphaltic concrete was installed over the sides and floor and compacted, resulting in a two inch thick layer. The surface of the asphalt was sealed with a cationic coal tar sealer. This sealed asphalt liner was covered with eight inches of sand. A network of perforated pipes was installed in the sand on the sloping base, and these pipes were connected to manholes for the collection of the liquid that drains from the wastes (leachate). However, most of this original leachate collection system no longer functions. Presently, leachate is pumped from the bottom of the gas wells to a tank located next to the landfill. From here, it is pumped through a force main to a sewer connected to the wastewater treatment plant in Rockford. Landfill gas is collected and is primarily used to dry sludge from the Rockford wastewater treatment plant before the sludge is placed in the landfill.

Because the nearby groundwater was found to be contaminated with arsenic, cadmium, and bis(2-ethylhexyl)phthalate, the Site was proposed for inclusion on the USEPA's National Priorities List (NPL) in October 1984. The NPL is the list of uncontrolled hazardous substance releases in the United States that are priorities for long-term remedial evaluation and response. The Site was added to the NPL in June 1986.

The USEPA and several of the potentially responsible parties (PRPs) for this Site reached agreement, embodied in an Administrative Order by Consent, with an effective date of October 16, 1986, that required the Respondents to conduct a remedial investigation (RI) and a feasibility study (FS) at the Site. The reports for the RI and the FS were submitted in March 1991. Additional studies were carried out later as a result of this Order.

An agreement, embodied in a Consent Decree, entered on February 11, 1993, was reached with several of the PRPs that requires them to perform the remedial design, remedial action, and operation and maintenance for the remedy selected in the 1991 ROD. Primarily, this requires the Site operator to do this work.

The Acme Solvent Reclaiming, Inc. site (Acme Solvent site) is located east of the Pagel's Pit site. The Acme Solvent site was proposed for the NPL in December 1982 and was placed on this list in September 1983. Part of the remediation of this site has resulted in the installation of a pump-and-treat system approximately half-way between the two sites. The treated water is discharged into the northern intermittent stream, but generally the water infiltrates before it reaches Killbuck Creek.

SUMMARY OF SITE CHARACTERISTICS

During the remedial investigation for the Pagel's Pit site, the areas on and around both the Acme Solvent site and the Pagel's Pit site were studied.

The water table occurs in the fractured dolomite bedrock east of and below the eastern quarter of the Pagel's Pit site. Under the remaining three quarters of the Site and west of the Site, the water table occurs in the unconsolidated materials. Groundwater flow in the area of the two sites is generally from east to west in the upper aquifer, slightly toward the north.

Chloride ion serves as an indicator of areas of groundwater that may have been affected by leachate from a landfill; chloride ion is generally recognized as a conservative, non-reactive parameter in groundwater systems. Based on the chloride ion concentrations in the groundwater data obtained in April 1998, the area containing elevated chloride ion concentrations, and hence the area that may have been affected by leachate from the landfill, extends from about midway along the north border of the landfill (east of well B15R) (see Figure 1), around the western end of the landfill, and along the south border of the landfill to at least the southwest area (well G115), and probably back into the southeast area of the site as well. It is uncertain whether or not the elevated chloride concentrations in the southeast corner are entirely due to the landfill, since there is a septic field east of here into which softener regeneration water has been discharged. Generally, the affected area was relatively close to the waste boundary, but a well on the other side of Killbuck Creek (well G34S) also had an elevated chloride concentration; other wells west of the creek have sometimes had elevated chloride concentrations, particularly well G35D, where the chloride concentration has fluctuated between 18 and 530 mg/l in the February 1997 through January 1999 period.

Volatile organic compounds (VOCs) have been found in the shallow aquifer on and in the vicinity of both sites. They were found both inside and outside of the area defined by elevated chloride concentrations. During the 1988-90 RI, the highest concentrations of VOCs were found in wells on or near the Acme site. The next highest concentrations were found in the southeast corner. During the initial RI a connection between the two areas was not definitely shown, possibly because there was fractured bedrock between the two areas through which groundwater would only primarily flow in the fractures. Well G120B was installed between the two sites, and it was found to contain elevated levels of VOCs. Thus it was shown that at least some of the VOCs present in the southeast corner may have come from the Acme site. However, it is likely that some of the contamination here is coming from the landfill; chlorinated benzenes have been found in this area but have not been found in wells closer to the Acme site.

Applicable groundwater quality standards (AGQSs) have been established for substances that may be present at the Pagel's Pit site. The AGQS established for any constituent is the background concentration or an Illinois Pollution Control Board established standard. Background concentration means that concentration of a constituent that is established as the background in accordance with the regulations. Statistical tests and procedures may be used in determining the background concentrations. These AGQSs define a groundwater management zone (GMZ) in the downgradient direction. The GMZ is a three dimensional region containing groundwater being managed to mitigate impairment caused by the release of contaminants from a site that is subject to a corrective action process approved by Illinois EPA or for which the owner or operator undertakes an adequate corrective action in a timely and appropriate manner and provides a written confirmation to Illinois EPA. (35 IAC 620.250) The GMZ consists of the area where concentrations exceed the AGQSs. Here, the GMZ is defined primarily by the extent of the chloride and ammonia contamination.

In the GMZ during 1997 and 1998, tetrachloroethene in the only organic whose concentrations have exceeded the maximum contaminant level (MCL) (MCL = 5 µg/l), in wells G116A, G116D, G132, G35S, G39, and P4R; the maximum concentration was 12 µg/l. The concentrations of several other organics exceeded their AGQSs in the GMZ. In the "background" wells (well G120B and the 5 wells in the southeast corner), the concentrations of several substances exceeded their MCLs, tetrachloroethene in wells G109A and G113A, trichloroethene in wells G120B and G113A, cis-1,2-dichloroethene in well G113A, vinyl chloride in wells G113A and G114, and 1,2-dichloropropane in well G113A. The concentrations of a few other organics exceeded their AGQSs, including 1,2,3-trichlorobenzene, 1,2,4-trichlorobenzene, and chlorobenzene.

During the investigations for the remedial design it was found that pumping a well located between the waste disposal area and the creek resulted in a much greater flow rate than had been thought likely when the 1991 ROD was written. Also it was found that the groundwater downgradient of the landfill contained significant concentrations of ammonia. If this groundwater were extracted as part of a system to prevent the movement of the contaminated groundwater downgradient, this ammonia would have to be removed before the treated water could be discharged, unless the concentrations were significantly decreased during pumping because of the introduction of uncontaminated water. Generally the removal would involve raising the pH, stripping the ammonia, and then lowering the pH to an acceptable level for discharge. It was at this time that an alternative to the pump-and-treat system was sought. The main method looked at was an air sparging system in which air would be injected into the groundwater in place in order to strip the few volatile organics from the water. However, since the landfill owners now owned land on the other side

of the creek, which had not been owned when the previous ROD was issued, the Illinois EPA group overseeing the operating permit agreed that the best course of action would be to monitor the situation to make sure that the AGQSs were not exceeded beyond the GMZ and determine if the eventually covering of the wastes and the removal of most of the leachate would lead to a reduction in the concentrations of contaminants in the groundwater.

In 1998, none of the major chlorinated ethenes were detected in the creek, nor were several other VOCs that were checked. The ammonia concentrations in the creek generally increases between the upstream and downstream sampling points, which may indicate an effect from the landfill. However, the chloride concentrations increase only slightly.

The chloride and sodium concentrations in the leachate in the 1997 to 1999 period are generally somewhat higher than the ranges for typical landfill leachate. In this period there were no detections of chlorobenzene, 1,4-dichlorobenzene, or the two trichlorobenzenes detected in the southeast corner, nor were there detects of 1,2-dichloropropane. None of the major chlorinated ethenes were detected in the leachate.

In the 1991 RI a baseline risk assessment was prepared for the Pagel's Pit site to characterize the nature and estimate the magnitude of potential risks to public health and the environment. The potential risks are caused by the chemicals of concern and are based on current and possible future land use. The scenario pertaining to potential future groundwater use as a water supply was found to represent the greatest risk to humans at the Pagel's Pit site. Under this scenario, exposure occurs through groundwater ingestion and from dermal contact and inhalation while bathing. The calculation was done for the groundwater west of Lindenwood Road. The calculated cumulative hazard index of 5, not including cobalt exposure (found in only one well), compared to the Superfund goal of 1, indicates that exposure to the noncarcinogens in the groundwater may cause adverse health effects. The majority of this was due to exposure to 1,2-dichloroethenes, thallium, and zinc. The calculated cumulative cancer risk of $1x10^{-3}$ exceeds the USEPA target risk range of 10^{-4} to 10^{-6}. The majority of this is due to exposure to vinyl chloride and arsenic.

The total 1,2-dichloroethene concentration (the lesser of the 95% upper-bound confidence limit of the arithmetic mean or the maximum concentration detected) used in the calculation for the risk was 240 µg/l. In April 1998 there was only one detect of 1,2-dichloroethene in the groundwater west of Lindenwood Rd. (31 wells), which was 42 µg/l; the detection limit was 5 µg/l. The thallium concentration used for the risk was 0.0028 mg/l (ranged from 0.002 to 0.006 mg/l). In April 1998 there were only two detects of thallium at about 0.0053 mg/l; the detection limit was

0.005 mg/l. (The two thallium detects were in wells from the same general area. No thallium was detected in the leachate in the 1997 through early 1999 period, with detections limits of 0.0015, 0.0022, and 0.10 mg/l.) The zinc concentration used for the risk was 6.3 mg/l (ranging from 0.037 to 6.34 mg/l). In April 1998 there were 29 detects of zinc, ranging in concentration to 13.9 mg/l, but 26 of the detects were below 6.3 mg/l; the detection limit was 0.022 mg/l. The vinyl chloride concentration used for the risk was 14 µg/l. In April 1998 there was only one detect of vinyl chloride, at 15 µg/l; the detection limit was 2 µg/l. The arsenic concentration used for the risk was 0.0084 mg/l (ranging from 0.002 to 0.046 mg/l). In April 1998 there were 15 detects of arsenic, ranging in concentration to 0.034 mg/l, but 8 of the detects were below 0.0084 mg/l; the detection limit was 0.002 mg/l.

REMEDIAL ACTION OBJECTIVES

The remedial action objectives that are guiding the selection of a remedy for this site in the 1991 ROD and the upcoming ROD are:

1) Restore the aquifer outside the waste disposal area and the surrounding zone of attenuation to drinking water standards within a reasonable time frame.

2) Minimize future migration of groundwater contamination.

3) Reduce or eliminate future contamination of groundwater.

4) Reduce or eliminate the direct contact threat of contaminated soils and wastes.

5) Minimize or eliminate contaminant migration to the groundwater and surface waters to levels that ensure the beneficial use of the resources.

6) Minimize or eliminate the threat of exposure to landfill gas.

SCOPE AND ROLE OF THE OPERABLE UNITS

OU 1 was identified at the beginning of this document. A remedy for it was described in the 1991 ROD. Briefly, this remedy consisted of:

- a sanitary landfill cover for the waste disposal area;
- groundwater extraction along the west side of the site;
- on-site groundwater treatment by carbon adsorption or air stripping following pretreatment with a solids filter, with the treated water being discharged to surface water;
- removal of inorganics by treatment, if necessary, prior to carbon adsorption or air stripping;

- leachate extraction and transfer to the local publicly owned treatment works for treatment;
- gas extraction and the use of the gas for fuel or the flaring of the gas;
- deed restrictions; and
- site monitoring and maintenance of all remedial action components.

These elements address all of the remedial action objectives except for the effect that the contamination in the groundwater in the southeast corner might have on the rest of the groundwater. This ROD for OU 2 addresses the effect that the contamination in the groundwater in the southeast corner may have on the rest of the groundwater.

PROPOSED REMEDIAL ACTIONS

Description of the "No Action" Preferred Alternative for OU 2--Southeast Corner Groundwater

In the area of the Pagel's Pit site the general direction of flow of the groundwater is toward the west. This will result in most, if not all, of the contaminated groundwater moving toward the west and mixing with the contaminated groundwater already there. At the Acme Solvent site a pump-and-treat system has been installed to block the migration of contamination from that site into the southeast corner of the Pagel's Pit site (and other areas to the west of the Acme solvent site). The VOC contamination in the groundwater at well G120B, which is west of the extraction wells for the Acme Solvent site, has dropped from a concentration of 149 µg/l in 1992 to about 35 µg/l in 1997 to 1998. The eventual capping and leachate removal called for by the 1991 ROD for the waste disposal area at the Pagel's Pit site, after the present waste disposal area (called the north unit) reaches capacity, which is presently expected to happen within about 2 years, should reduce or eliminate leakage of leachate from this landfill into the southeast corner. The southeast corner property is owned by the operator of the present landfill; this operator has control over use of this property. Deed restrictions have been placed on the property being used for the present landfill that prevent the use of the groundwater here for a water supply. A new landfill (called the south unit) is being developed to the south and southwest of the southeast corner, which will further restrict possible future uses of the property and the property immediately surrounding it.

For these reasons, it is proposed that a no action alternative be used for the groundwater in the southeast corner (OU 2).

Description of the Proposed Remedy Change for the Groundwater of OU 1

When it was determined that, if the groundwater extraction and treatment system of the 1991 ROD were to be implemented, the amount of work would be greatly increased because of the higher yield of the aquifer and the presence of significant amounts of ammonia, another means of addressing the contaminated groundwater at the western edge of the property was sought. Since the 1991 ROD had been issued, the landfill operator had obtained additional property to the west of the site, which is west of Killbuck Creek. The operator had also constructed a replacement wetland on part of this property, next to the creek. The operator had discussed with the Illinois EPA permit section possible means of addressing the contamination in this groundwater. As a result, a groundwater management zone was set up based on a proposal to determine what effect the capping of the landfill and the extraction of much of the leachate from the landfill would have on the groundwater contamination. The western third of the landfill has been capped, finishing in late 1997, and in the spring of 1999 significant extraction of leachate has finally begun; there had been a delay because of the failure of the initial pumps tried. The level of organic contamination along the western border of the landfill is not high, when compared to that that had been present at the Acme Solvent site. In April 1998 the arsenic contamination along the western border of the landfill was below 7 µg/l.

For these reason it is proposed that monitored natural attenuation be used for the groundwater at the western border of the landfill along with the imposition of deed restrictions on the property owned by the landfill to the west of the creek and the inclusion of a contingent remedy in case the groundwater contamination does not appear to be decreasing or begins to threaten properties further to the west. The deed restrictions will be to prevent the use of the groundwater on this property as a drinking water supply. The contingent remedy might be an extraction and treatment system similar to what was in the 1991 ROD or an in-situ remedy; either must be acceptable to USEPA and Illinois EPA. The contingent remedy would be implemented upon the determination that it is necessary by USEPA, Illinois EPA, or the landfill operator.

Evaluation of the Alternative for the OU 1 Change

This section discusses the nine evaluation criteria with regard to the proposed alternative for changing the remedy for the groundwater at the site.

1. Overall Protection of Human Health and the Environment

At present there is no exposure for humans or animals to the contaminated groundwater. There may be some exposure to the contamination through contact with water from the creek. During the RI done for the 1991 ROD, however, no unacceptable risks were identified through this pathway. Since future exposure to contaminated groundwater will be prevented by institutional controls and the groundwater will be monitored to make sure that the contamination is not increasing, human health and the environment will be protected.

2. Compliance with Applicable or Relevant and Appropriate Requirements

The operation of the landfill is being overseen by the Illinois EPA as part of its permitting responsibilities. The landfill needs to be operated in compliance with all applicable or relevant and appropriate requirements (ARARs). The landfill operator complying with its permit will assure that the landfill is complying with the ARARs.

3. Long-term Effectiveness and Permanence

The proposed alternative leads to the restoration of the groundwater to beneficial use once the landfill is fully closed. The capping of the landfill and the removal of the leachate will control the source of the groundwater contamination. If the groundwater contamination is not moving toward the requirements for use of the groundwater, except for the groundwater under the waste disposal area itself, a contingency groundwater remedy will be implemented to remove the contamination. Capping of a landfill is considered effective and, with the required maintenance, permanent.

4. Reduction of Toxicity, Mobility, or Volume Through Treatment

It is expected that the contingent groundwater remedy, which would include some treatment, will not be necessary. That, instead, nature, along with source control, will effect the necessary reduction in the groundwater contamination. Therefore, for the groundwater, treatment is not expected to be necessary. There is treatment being used in the control of the source; leachate is being removed from the landfill and is being sent to the local wastewater treatment plant and landfill gas is being Removed and burned.

5. Short-term Effectiveness

The implementation of the preferred alternative of monitored

natural attenuation will not present any additional exposures TO humans or the environment to the contamination. Although possibly the contamination might be reduced more quickly with an extraction and treatment system or an in-situ process, such a system might result in exposures to humans and the environment as the contaminates are being removed (volatiles being stripped from the water and/or generation of a sludge that may contain hazardous substances).

6. Implementability

There are no anticipated problems associated with implementing a monitored natural attenuation remedy. If groundwater remediation is needed, some investigation and development will probably be needed to deign an effective and proper system.

7. Cost

Monitored natural attenuation is expected to be much more cost-effective than the implementation of an extraction and treatment system immediately for groundwater remediation, even if it takes longer for the groundwater to reach the requirements for beneficial use.

8. State Acceptance

The State of Illinois is aware of the proposed change for addressing the groundwater contamination. Its acceptance will be determined after the public comment period.

9. Public Acceptance

Following the public comment period, community acceptance of the preferred alternative will be evaluated and described in the Record of Decision that will be issued for the remedy.

COMMUNITY PARTICIPATION

PROPOSED PLAN
OPERABLE UNIT 2 and GROUNDWATER REMEDY MODIFICATION
PAGEL'S PIT SITE
WINNEBAGO COUNTY, ILLINOIS
Draft, July 20, 1999

INTRODUCTION

This Proposed Plan identifies the preferred alternatives for the remediation of the groundwater at the Pagel's Pit Superfund site and provides the explanations for the preferences. This Plan includes a summary of the June 1991 Record of Decision (ROD) for Operable Unit (OU) 1, which consisted of the wastes that have been disposed of at the Site and the contaminated groundwater around the waste disposal area, but not the contaminated groundwater in the southeast corner of the Site. The groundwater in the southeast corner is OU 2. This Proposed Plan identifies the proposed remedial action for OU 2 and identifies a proposed change for the remedial action for the groundwater of OU 1, the remaining groundwater.

This document is being issued by the U.S. Environmental Protection Agency (USEPA), the lead agency for Site activities. USEPA, in consultation with the Illinois Environmental Protection Agency (Illinois EPA) will select a final remedy for the Site after reviewing and considering all information submitted during the 30-day public comment period.

USEPA is issuing this Proposed Plan as part of its public participation responsibilities under section 117(a) of the Comprehensive Environmental, Response, Compensation, and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA). This Proposed Plan summarizes information that can be found in greater detail in the remedial investigation (RI) and feasibility studies (FS) reports that were issued in 1991 and other documents contained in the Administrative Record file for this Site. USEPA encourages the public to review these documents to gain a more comprehensive understanding of the Site and Superfund activities that have been conducted at the Site. The Administrative Record file, which contains the information on which the selection of the response action will be based, is available at the USEPA Region 5 in Chicago and at:

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Figure 1), south of Baxter Road and about 5 miles south of Rockford, Illinois. The landfill has been in operation since about 1972 and has approximately 1 to 2 years of operation left before it reaches capacity. Municipal refuse and sewage treatment plant sludge have been the primary wastes accepted at the Site. Illinois special wastes (industrial process wastes, pollution control wastes, or hazardous wastes, except as determined pursuant to the Illinois Environmental Protection Act) have also been disposed of at the facility.

The Site is located in a predominately rural unincorporated area. It is bounded on the west by Killbuck (or Kilbuck) Creek and on the east by Lindenwood Road. Killbuck Creek, a perennial stream, merges with the Kishwaukee River about 2.5 miles northwest of the Site. The Kishwaukee River merges with the Rock River about 1.5 miles northwest of the confluence of Killbuck Creek and the Kishwaukee River. The Site is located on a topographic high between Killbuck Creek to the west and unnamed intermittent streams to the north and the south. Land use around the Site is a mix of agricultural, rural residential, commercial, and industrial. A new waste disposal unit is being developed to the south of the Site.

The topography surrounding the landfill area is relatively flat to gently rolling. The ground surface elevation is approximately 706 feet mean sea level (MSL) at Killbuck Creek. The landfill lies outside of the 100-year floodplain of Killbuck Creek and is not within any designated wetland area. Although an inventory of terrestrial plant and animal species has not been performed, the Site is not known to be inhabited by endangered or threatened species.

Access to that part of the Site closest to Lindenwood Road is restricted by a chain link fence. Access to the rest of the Site is restricted by other fencing and the topography, which includes steep slopes and heavily wooded areas.

The surficial unconsolidated deposits in the area of the Site are predominantly glacial drift ranging from a thin mantle over the dolomite in the bedrock uplands to the east of the Site to greater than 70 feet in the bedrock valley west of the Site. The unconsolidated deposits are predominantly sand and gravel underneath and north of the Site with a silty clay to the south of the Site. The underlying bedrock surface is highly variable. The dolomite bedrock is generally fractured but the intensity is variable. Chert layers or nodules were commonly noted on boring logs as were vugs (void spaces), but cavernous zones were not reported.

This operating landfill is located at a former sand and gravel quarry. It has been sequentially constructed and filled in several sections. Development initially occurred in an east to west

direction, first in the southern half and then in the northern half. The western one-third has now been completed and the final cover has been installed. The landfill wastes cover approximately 47 acres. The landfill bottom was constructed by grading and compacting the base and side walls of the landfill. Asphaltic concrete was installed over the sides and floor and compacted, resulting in a two inch thick layer. The surface of the asphalt was sealed with a cationic coal tar sealer. This sealed asphalt liner was covered with eight inches of sand. A network of perforated pipes was installed in the sand on the sloping base, and these pipes were connected to manholes for the collection of the liquid that drains from the wastes (leachate). However, most of this original leachate collection system no longer functions. Presently, leachate is pumped from the bottom of the gas wells to a tank located next to the landfill. From here, it is pumped through a force main to a sewer connected to the wastewater treatment plant in Rockford. Landfill gas is collected and is primarily used to dry sludge from the Rockford wastewater treatment plant before the sludge is placed in the landfill.

Because the nearby groundwater was found to be contaminated with arsenic, cadmium, and bis(2-ethylhexyl)phthalate, the Site was proposed for inclusion on the USEPA's National Priorities List (NPL) in October 1984. The NPL is the list of uncontrolled hazardous substance releases in the United States that are priorities for long-term remedial evaluation and response. The Site was added to the NPL in June 1986.

The USEPA and several of the potentially responsible parties (PRPs) for this Site reached agreement, embodied in an Administrative Order by Consent, with an effective date of October 16, 1986, that required the Respondents to conduct a remedial investigation (RI) and a feasibility study (FS) at the Site. The reports for the RI and the FS were submitted in March 1991. Additional studies were carried out later as a result of this Order.

An agreement, embodied in a Consent Decree, entered on February 11, 1993, was reached with several of the PRPs that requires them to perform the remedial design, remedial action, and operation and maintenance for the remedy selected in the 1991 ROD. Primarily, this requires the Site operator to do this work.

The Acme Solvent Reclaiming, Inc. site (Acme Solvent site) is located east of the Pagel's Pit site. The Acme Solvent site was proposed for the NPL in December 1982 and was placed on this list in September 1983. Part of the remediation of this site has resulted in the installation of a pump-and-treat system approximately half-way between the two sites. The treated water is discharged into the northern intermittent stream, but generally the water infiltrates before it reaches Killbuck Creek.

SUMMARY OF SITE CHARACTERISTICS

During the remedial investigation for the Pagel's Pit site, the areas on and around both the Acme Solvent site and the Pagel's Pit site were studied.

The water table occurs in the fractured dolomite bedrock east of and below the eastern quarter of the Pagel's Pit site. Under the remaining three quarters of the Site and west of the Site, the water table occurs in the unconsolidated materials. Groundwater flow in the area of the two sites is generally from east to west in the upper aquifer, slightly toward the north.

Chloride ion serves as an indicator of areas of groundwater that may have been affected by leachate from a landfill; chloride ion is generally recognized as a conservative, non-reactive parameter in groundwater systems. Based on the chloride ion concentrations in the groundwater data obtained in April 1998, the area containing elevated chloride ion concentrations, and hence the area that may have been affected by leachate from the landfill, extends from about midway along the north border of the landfill (east of well B15R) (see Figure 1), around the western end of the landfill, and along the south border of the landfill to at least the southwest area (well G115), and probably back into the southeast area of the site as well. It is uncertain whether or not the elevated chloride concentrations in the southeast corner are entirely due to the landfill, since there is a septic field east of here into which softener regeneration water has been discharged. Generally, the affected area was relatively close to the waste boundary, but a well on the other side of Killbuck Creek (well G34S) also had an elevated chloride concentration; other wells west of the creek have sometimes had elevated chloride concentrations, particularly well G35D, where the chloride concentration has fluctuated between 18 and 530 mg/l in the February 1997 through January 1999 period.

Volatile organic compounds (VOCs) have been found in the shallow aquifer on and in the vicinity of both sites. They were found both inside and outside of the area defined by elevated chloride concentrations. During the 1988-90 RI, the highest concentrations of VOCs were found in wells on or near the Acme Solvent site. The next highest concentrations were found in the southeast corner. During the initial RI a connection between the two areas was not definitely shown, possibly because there was fractured bedrock between the two areas through which groundwater would move only primarily in the fractures. Well G120B was installed between the two sites, and it was found to contain elevated levels of VOCs. Thus it was shown that at least some of the VOCs present in the southeast corner may have come from the Acme Solvent site. However, it is likely that some of the contamination here is coming from the landfill; chlorinated benzenes have been found in this area but have not been found in wells

closer to the Acme Solvent site.

Applicable groundwater quality standards (AGQSs) have been established for substances that may be present at the Pagel's Pit site. The AGQS established for any constituent is the background concentration or an Illinois Pollution Control Board established standard. (See Title 35 of the Illinois Administrative Code (IAC), section 811.320 for further information about AGQSs. Part 811 of 35 IAC is entitled "Standards for New Solid Waste Landfills".) Background concentration means that concentration of a constituent that is established as the background in accordance with the regulations. Statistical tests and procedures may be used in determining the background concentrations. These AGQSs define a groundwater management zone (GMZ) in the downgradient direction. The GMZ is a three dimensional region containing groundwater being managed to mitigate impairment caused by the release of contaminants from a site that is subject to a corrective action process approved by Illinois EPA or for which the owner or operator undertakes an adequate corrective action in a timely and appropriate manner and provides a written confirmation to Illinois EPA. (35 IAC 620.250) The GMZ consists of the area where concentrations exceed the AGQSs. Here, the GMZ is defined primarily by the extent of the chloride and ammonia contamination; the AGQS for chloride is 87.5 mg/l and the AGQS for ammonia-nitrogen is 0.9 mg/l. Roughly the GMZ includes the area from about the mid-points of the waste disposal area on the north and the south borders toward the west to the vicinity of well nest G116 and G34. There is also a zone of attenuation around the waste disposal area within which concentrations of constituents in leachate discharged from the unit may exceed AGQSs. This zone is a volume bounded by a vertical plane at the property boundary or 100 feet from the edge of the unit, whichever is less, extending from the ground surface to the bottom of the uppermost aquifer and excluding the volume occupied by the waste. In some cases there may be a zone of attenuation but no GMZ because there are no exceedances of AGQSs outside the zone of attenuation.

(Do not confuse the use of the word "attenuation" here with its use later in "monitored natural attenuation". In the zone of attenuation it is expected that natural attenuation processes are occurring, but the zone has a fixed physical definition. In monitored natural attenuation the area being considered is defined by the elevated (above background) concentrations of the contaminants in the groundwater.)

In the GMZ during 1997 and 1998, tetrachloroethene is the only organic whose concentrations have exceeded the maximum contaminant level (MCL) (MCL = 5 µg/l), in wells G116A, G116D, G132, G35S, G39, and P4R; the maximum concentration was 12 µg/l so the AGQS, which is 26 µg/l, was not exceeded. The concentrations of several other organics exceeded their AGQSs in the GMZ, including

those of 1,4-dichlorobenzene in four wells; three of the wells are in or very close to the zone of attenuation and the fourth is directly downgradient of the landfill. In the "background" wells (well G120B and the 5 wells in the southeast corner--these wells are not part of the GMZ since they are not considered to be downgradient of the waste disposal area, although the water elevations indicate that there is apparently side-gradient flow from the waste disposal area in the southeast corner), the concentrations of several substances exceeded their MCLs, tetrachloroethene in wells G109A and G113A, trichloroethene in wells G120B and G113A, cis-1,2-dichloroethene in well G113A, vinyl chloride in wells G113A and G114, and 1,2-dichloropropane in well G113A. The concentrations of a few other organics exceeded their AGQSs, including 1,2,3-trichlorobenzene, 1,2,4-trichlorobenzene, 1,4-dichlorobenzene, and chlorobenzene. These numbers indicate the low levels of VOCs generally in the GMZ. They also show the possible influence of the Acme Solvent site on the groundwater in the southeast corner (the presence of several chlorinated ethenes).

In 1998, none of the major chlorinated ethenes were detected in the creek, nor were several other VOCs that were checked. The ammonia concentrations in the creek generally increases between the upstream and downstream sampling points, which may indicate an effect from the landfill. However, the chloride concentrations increase only slightly.

The chloride and sodium concentrations in the leachate in the 1997 to 1999 period are generally somewhat higher than the ranges for typical landfill leachate. In this period there were no detections of chlorobenzene, 1,4-dichlorobenzene, or the two trichlorobenzenes detected in the southeast corner, nor were there detects of 1,2-dichloropropane. None of the major chlorinated ethenes were detected in the leachate.

SUMMARY OF SITE RISKS

In the 1991 RI a baseline risk assessment was prepared for the Pagel's Pit site to characterize the nature and estimate the magnitude of potential risks to public health and the environment. The potential risks were caused by the chemicals of concern and were based on current and possible future land use. The scenario pertaining to potential future groundwater use as a water supply was found to represent the greatest risk to humans at the Pagel's Pit site. Under this scenario, exposure occurs through groundwater ingestion and from dermal contact and inhalation while bathing. The calculation was done for the groundwater west of Lindenwood Road. The calculated cumulative hazard index of 5, not including cobalt exposure (found in only one well), compared to the Superfund goal of 1, indicated that exposure to the noncarcinogens in the groundwater may cause adverse health effects. The majority of this was due to exposure to 1,2-dichloroethenes,

thallium, and zinc. The calculated cumulative cancer risk of $1x10^{-3}$ exceeded the USEPA target risk range of 10^{-4} to 10^{-6}. The majority of this was due to exposure to vinyl chloride and arsenic.

The total 1,2-dichloroethene concentration (the lesser of the 95% upper-bound confidence limit of the arithmetic mean or the maximum concentration detected) used in the calculation for the risk in ~~1881~~ 1991 was 240 µg/l. In April 1998 there was only one detect of 1,2-dichloroethene in the groundwater west of Lindenwood Rd. (31 wells), which was 42 µg/l; the detection limit was 5 µg/l. The thallium concentration used for the risk was 0.0028 mg/l (ranged from 0.002 to 0.006 mg/l). In April 1998 there were only two detects of thallium at about 0.0053 mg/l; the detection limit was 0.005 mg/l. (The two thallium detects were in wells from the same general area. No thallium was detected in the leachate in the 1997 through early 1999 period, with detections limits of 0.0015, 0.0022, and 0.10 mg/l.) The zinc concentration used for the risk was 6.3 mg/l (ranging from 0.037 to 6.34 mg/l). In April 1998 there were 29 detects of zinc, ranging in concentration to 13.9 mg/l, but 26 of the detects were below 6.3 mg/l; the detection limit was 0.022 mg/l. The vinyl chloride concentration used for the risk was 14 µg/l. In April 1998 there was only one detect of vinyl chloride, at 15 µg/l; the detection limit was 2 µg/l. The arsenic concentration used for the risk was 0.0084 mg/l (ranging from 0.002 to 0.046 mg/l). In April 1998 there were 15 detects of arsenic, ranging in concentration to 0.034 mg/l, but 8 of the detects were below 0.0084 mg/l; the detection limit was 0.002 mg/l. Thus the concentrations of the substances that were the significant contributors to the risk calculated in 1991 have been generally decreasing or remaining similar to the levels then.

REMEDIAL ACTION OBJECTIVES

The remedial action objectives that are guiding the selection of a remedy for this site in the 1991 ROD and the upcoming ROD are:

1) Restore the aquifer outside the waste disposal area and the surrounding zone of attenuation to drinking water standards within a reasonable time frame.

2) Minimize future migration of groundwater contamination.

3) Reduce or eliminate future contamination of groundwater.

4) Reduce or eliminate the direct contact threat of contaminated soils and wastes.

5) Minimize or eliminate contaminant migration to the groundwater and surface waters to levels that ensure the beneficial use of the resources.

6) Minimize or eliminate the threat of exposure to landfill gas.

SCOPE AND ROLE OF THE OPERABLE UNITS

OU 1 was identified at the beginning of this document. A remedy for it was described in the 1991 ROD. Briefly, this remedy consisted of:

- a sanitary landfill cover for the waste disposal area;
- groundwater extraction along the west side of the site;
- on-site groundwater treatment by carbon adsorption or air stripping following pretreatment with a solids filter, with the treated water being discharged to surface water;
- removal of inorganics by treatment, if necessary, prior to carbon adsorption or air stripping;
- leachate extraction and transfer to the local publicly owned treatment works for treatment;
- gas extraction and the use of the gas for fuel or the flaring of the gas;
- deed restrictions; and
- site monitoring and maintenance of all remedial action components.

These elements address all of the remedial action objectives except for the effect that the contamination in the groundwater in the southeast corner might have on the rest of the groundwater. This ROD for OU 2 addresses the effect that the contamination in the groundwater in the southeast corner may have on the rest of the groundwater.

SUMMARY OF ALTERNATIVES

During the investigations for the remedial design it was found that pumping a well located between the waste disposal area and the creek resulted in a much greater flow rate than had been thought likely when the 1991 ROD was written. Also it was found that the groundwater downgradient of the landfill contained significant concentrations of ammonia; ammonia had not been considered in the remedial investigation done for the 1991 ROD. If this groundwater were extracted as part of a system to prevent the movement of the contaminated groundwater downgradient, this ammonia would have to be removed before the treated water could be discharged, unless the concentrations were significantly decreased during pumping because of the introduction of uncontaminated water from the creek. Generally, the removal of ammonia would involve raising the pH, stripping, and then lowering the pH to an acceptable level for discharge. It was at this time that an alternative to the pump-and-treat system was sought. The main method looked at was an air sparging system in which air would be injected into the groundwater in place in order to strip the few volatile organics from the water. However, since the landfill

owners now owned land on the other side of the creek, which had not been owned when the previous ROD was issued and the concentrations of VOCs in the groundwater west of the waste disposal area were low, the Illinois EPA group overseeing the operating permit agreed that the best course of action would be to monitor the situation to make sure that the AGQSs were not exceeded beyond the GMZ and to determine if eventually covering the wastes and removing most of the leachate would lead to a reduction in the concentrations of contaminants in the groundwater.

The landfill operator's contractor did a preliminary design of the air sparging system, in which air would be injected into the groundwater through wells and would be collected in adjacent wells, really a combination air sparging and soil vapor extraction. The contractor also considered some other possible alternatives for treatment of water extracted as part of a barrier well system, which is what was selected in the 1991 ROD.

The contractor estimated the costs for the air sparging system and an ex-situ system similar to Alternative 6 of the 1991 ROD, one of the selected alternatives(air stripping of the extracted groundwater and discharge of the treated water into the creek). For the air sparging system, the estimated capital costs were $420,000 and the annual operation and maintenance costs were $37,000 (1995). Its estimate for the air stripping system were $3,100,000 for capital costs and $780,000 for the annual operating and maintenance costs. The air stripping part of Alternative 6 was estimated at about $320,000 for capital costs and about $95,000 annual operating costs in the 1991 feasibility study report. The differences are primarily due to an estimated flow of 100 gpm in 1991 and 500 gpm for this study and the need for stripping the ammonia in the 1995 study, which was not included in the 1991 estimate.

Therefore, the alternatives for the groundwater other than that in the southeast corner (the groundwater part of OU 1) are to call for a no-action remedy, which would, however, include monitoring to follow the course of the contamination, to make no change, and therefore require the pump-and-treat barrier system between the landfill and the creek, or to implement monitored natural attenuation with a contingency that, if the groundwater contamination increases, if the extent of the groundwater contamination increases (that is, if the AGQSs are exceeded regularly outside the groundwater management zone), or if the contamination becomes a threat to a drinking water source, an active means will be taken to address the contamination, either in-situ or ex-situ, depending on the means that it is determined would be best to use. The monitored natural attenuation alternative would call for the implementation of institutional controls restricting the use of groundwater on the property that the landfill owns west of the creek.

The only alternatives to be considered for the groundwater in the southeast corner are to attempt to remediate this water separately, most likely with some type of pump-and-treat system, or to handle this groundwater along the western edge of the landfill with the rest of the contaminated groundwater when it arrives there, that is a no-action remedy. Already there is the pump-and-treat system operating at the Acme Solvent site, which began operation in July 1995. This system is expected to reduce the organic contamination in the southeast corner groundwater.

Evaluation of the Alternatives

This section discusses the nine evaluation criteria with regard to the proposed alternatives. These alternatives are given near the end of the previous section.

1. Overall Protection of Human Health and the Environment

At present there is no exposure for humans or animals to the contaminated groundwater. There may be some exposure to the contamination through contact with water from the creek. During the RI done for the 1991 ROD, however, no unacceptable risks were identified for this pathway. Since future exposure to contaminated groundwater will be prevented by institutional controls that are in place or will be put into place, in all but a no-action remedy, and the groundwater will be monitored to make sure that the contamination is not increasing or spreading unacceptably, human health and the environment will be protected. Using no action for the southeast corner groundwater would not be expected to significantly change the rest of the groundwater at the Site downgradient from there, and already institutional controls are in place eliminating the use of the groundwater on the landfill property as a drinking water source.

2. Compliance with Applicable or Relevant and Appropriate Requirements

The operation of the landfill is being overseen by the Illinois EPA as part of its permitting responsibilities. The landfill needs to be operated in compliance with all applicable or relevant and appropriate requirements (ARARs). The landfill operator complying with its permit will assure that the landfill is complying with the ARARs. Except in the case of no action for OU 1, the other alternatives conform with the permit requirements.

3. Long-term Effectiveness and Permanence

Restoration of the groundwater outside the zone of attenuation to beneficial use once the landfill is fully closed is the goal. The capping of the landfill and the removal of the leachate will control the source of the groundwater contamination. All the proposed alternatives except for no action for OU 1 are expected

to lead to this. Capping of a landfill is considered effective and, with the required maintenance, permanent.

4. Reduction of Toxicity, Mobility, or Volume Through Treatment

Most of the reduction in toxicity, mobility, or volume will be obtained through the extraction of leachate from the landfill and its subsequent treatment in the local wastewater treatment plant. Ex-situ treatment of groundwater would also provide some reduction in this area, as would an in-situ treatment system. Such treatment with the monitored natural attenuation is not expected to be needed. There would be no treatment with the no-action remedies for OU 1 or OU 2.

5. Short-term Effectiveness

The implementation of any of the alternatives should not present any additional exposures to humans or the environment to the contamination, with the possible exception of site workers installing any wells. Although possibly the contamination might be reduced more quickly with an extraction and treatment system or an in-situ process than with monitored natural attenuation, such a system might result in exposures to humans and the environment as the contaminates are being removed (volatiles being stripped from the water and/or generation of a sludge that may contain hazardous substances).

6. Implementability

There are no anticipated problems associated with implementing any of the alternatives. If groundwater remediation is needed, some investigation and development will probably be needed to design an effective and proper system.

7. Cost

Monitored natural attenuation is expected to be much more cost-effective than the implementation of an extraction and treatment system immediately for groundwater remediation, even if it takes longer for the groundwater to reach the requirements for beneficial use. This can be seen from the cost figures presented above.

8. State Acceptance

The State of Illinois is aware of the proposed change for addressing the groundwater contamination and the proposed remedy for the southeast corner groundwater. Its acceptance will be determined after the public comment period.

9. Public Acceptance

Following the public comment period, community acceptance of the preferred alternative will be evaluated and described in the Record of Decision that will be issued for the remedy.

PROPOSED REMEDIAL ACTIONS

Description of the "No Action" Preferred Alternative for OU 2--Southeast Corner Groundwater

In the area of the Pagel's Pit site the general direction of flow of the groundwater is toward the west. This will result in most, if not all, of the contaminated groundwater moving toward the west and mixing with the contaminated groundwater already there. At the Acme Solvent site a pump-and-treat system has been installed to block the migration of contamination from that site into the southeast corner of the Pagel's Pit site (and other areas to the west of the Acme Solvent site). The VOC contamination in the groundwater at well G120B, which is west of the extraction wells for the Acme Solvent site, has dropped from a concentration of 149 µg/l in 1992 to about 35 µg/l in 1997 to 1998. The eventual capping and leachate removal called for by the 1991 ROD for the waste disposal area at the Pagel's Pit site, after the present waste disposal area (called the north unit) reaches capacity, which is presently expected to happen within about 2 years, should reduce or eliminate leakage of leachate from this landfill into the southeast corner. The southeast corner property is owned by the operator of the present landfill; this operator has control over use of this property. Deed restrictions have been placed on the property being used for the present landfill that prevent the use of the groundwater here for a water supply. A new landfill (called the south unit) is being developed to the south and southwest of the southeast corner, which will further restrict possible future uses of the property and the property immediately surrounding it.

For these reasons, it is proposed that a no action alternative be used for the groundwater in the southeast corner (OU 2).

Description of the Proposed Remedy Change for the Groundwater of OU 1

When it was determined that, if the groundwater extraction and treatment system of the 1991 ROD were to be implemented, the amount of work would be greatly increased because of the higher yield of the aquifer and the presence of significant amounts of ammonia, another means of addressing the contaminated groundwater at the western edge of the property was sought. Since the 1991 ROD was issued, the landfill operator has obtained additional property to the west of the site, which is west of Killbuck Creek. The operator has also constructed a replacement wetland

on part of this property, next to the creek. The operator has discussed with the Illinois EPA permit section possible means of addressing the contamination in this groundwater, and is working with them on this. As a result, a groundwater management zone was set up based on a proposal to determine what effect the capping of the landfill and the extraction of much of the leachate from the landfill would have on the groundwater contamination. The western third of the landfill has been capped, finishing in late 1997, and in the spring of 1999 significant extraction of leachate has finally begun; there had been a delay because of the failure of the initial pumps tried. The level of organic contamination along the western border of the landfill is not high, when compared to that that had been present at the Acme Solvent site. In April 1998 the arsenic contamination along the western border of the landfill was below 7 µg/l; the MCL for arsenic is 50 µg/l. As discussed above, the contamination west of Lindenwood has been decreasing or holding somewhat steady. The capping of the landfill and the reduction of the leachate level there is expected to further decrease the contamination in the groundwater. The operation of the pump-and-treat system at the Acme Solvent site will also reduce the contamination reaching this Site.

dissolved

For these reason it is proposed that monitored natural attenuation be used for the groundwater at the western border of the landfill along with the imposition of deed restrictions on the property owned by the landfill to the west of the creek and the inclusion of a contingent remedy in case the groundwater contamination does not appear to be decreasing or begins to threaten properties further to the west. The deed restrictions will be to prevent the use of the groundwater on this property as a drinking water supply. The contingent remedy might be an extraction and treatment system similar to what was described in the 1991 ROD or an in-situ remedy; either must be acceptable to USEPA and Illinois EPA. The contingent remedy would be implemented upon the determination that it is necessary by USEPA, Illinois EPA, or the landfill operator.

Discussion

Cost-effectiveness is the most decisive consideration in the selection of the preferred alternatives. Te preferred alternatives are protective and they comply with the ARARs. Although it will probably take longer for the groundwater to reach the levels necessary for its use with monitored natural attenuation, this additional time is not expected to be unreasonable.

The preferred alternatives can change in response to public comment or new information. Based on the information available at this time, USEPA believes the preferred alternatives would be protective of human health and the environment, would comply with ARARs, would be cost-effective, and would utilize permanent

solutions and alternative treatment technologies to the maximum extent practicable. The remedy, including that of the 1991 ROD, does not satisfy the statutory preference for treatment as a principal element of the remedy. The size of the landfill and the fact that no on-site hot spots representing major sources of contamination have been found to preclude a remedy in which treatment would be a principal element. No principal threat to which the treatment preference could be directed has been identified.

COMMUNITY PARTICIPATION

USEPA encourages the public to comment on the alternatives for the groundwater of OU 1 and the change in remedy for the groundwater of OU 1 and the data that has been presented in this Proposed Plan and in the documents that have been placed in the administrative record. These comments will be evaluated before the final remedy is selected for the Site. For a complete description of the studies that have been undertaken for the Site, interested parties can review the administrative record and other documents that are available in the information repository that is located at:

Rockford Public Library
215 North Wyman Street
Rockford, Illinois 61101

Written comments will be accepted during a public comment period from through . Members of the community are encouraged to attend a public meeting on at at the to discuss the Proposed Plan and the studies that have been conducted at the Site. Verbal comments may be made for the record during the meeting.

Comments received during the comment period and at the public meeting will be addressed in a Responsiveness Summary which will be included with the Record of Decision (ROD) and will be made public in the information repository after the ROD has been signed. To send written comments or obtain further information, both before and after the public meeting, please contact:

Gordon Blum (312-353-8501)
Community Involvement Coordinator
Office of Public Affairs (P-19J)

or

Bernard J. Schorle (312-886-4746)
Remedial Project Manager
Superfund Division (SR-6J)

both at

U.S. Environmental Protection Agency
77 West Jackson Boulevard
Chicago, Illinois 60604

Agency representatives can also be contacted through the toll free number, 800-621-8431, between 9:00 am and 4:30 pm, central time.